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REPORT OF THE WORKING GROUP ON ELECTRONIC DATA INTERCHANGE (EDI) ON THE WORK OF ITS TWENTY-FIFTH SESSION (New York, 4 - 15 January 1993)

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INTRODUCTION

1. At its twenty-fourth session (1991), the Commission was agreed that the legal issues of electronic data interchange (EDI) would become increasingly important as the use of EDI developed and that the Commission should undertake work in that field. The Commission was agreed that the matter needed detailed consideration by a Working Group. 1/

2. Pursuant to that decision, the Working Group on International Payments devoted its twenty-fourth session to identifying and discussing the legal issues arising from the increased use of EDI. The report of that session of the Working Group suggested that the review of legal issues arising out of the increased use of EDI had demonstrated that among those issues some would most appropriately be dealt with in the form of statutory provisions (A/CN.9/360, para. 129). As regards the possible preparation of a standard communication agreement for world-wide use in international trade, the Working Group was agreed that, at least currently, it was not necessary for the Commission to develop a standard communication agreement. However, the Working Group noted that, in line with the flexible approach recommended to the Commission concerning the form of the final instrument, situations might arise where the preparation of model contractual clauses would be regarded as an appropriate way of addressing specific issues (ibid., para. 132). The Working Group reaffirmed the need for close cooperation between all international organizations active in the field. It was agreed that the Commission, in view of its universal membership and general mandate as the core legal body of the United Nations system in the field of international trade law, should play a particularly active role in that respect (ibid., para. 133).

3. At its twenty-fifth session (1992), the Commission considered the report of the Working Group on International Payments on the work of its twenty-fourth session (A/CN.9/360). In line with the suggestions of the Working Group, the Commission was agreed that there existed a need to investigate further the legal issues of EDI and to develop practical rules in that field. It was agreed, along the lines suggested by the Working Group, that, while some issues would most appropriately be dealt with in the form of statutory provisions, other issues might more appropriately be dealt with through model contractual clauses. After discussion, the Commission endorsed the recommendation contained in the report of the Working Group (A/CN.9/360, paras. 129-133), reaffirmed the need for active cooperation between all international organizations active in the field, and entrusted the preparation of legal rules on EDI to the Working Group on International Payments, which it renamed the Working Group on Electronic Data Interchange. 2/

4. The Working Group on Electronic Data Interchange, which was composed of all States members of the Commission, held its twenty-fifth session in New York, from 4 to 15 January 1993. The session was attended by

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1/ Report of the United Nations Commission on International Trade Law on the work of its twenty-fourth session, Official Records of the General Assembly, Forty-sixth Session, Supplement No. 17 (A/46/17), paras. 314-317.

2/ Report of the United Nations Commission on International Trade Law on the work of its twenty-fifth session, Official Records of the General Assembly, Forty-seventh Session, Supplement No. 17 (A/47/17), paras. 140-148.

representatives of the following States members of the Working Group: Austria, Bulgaria, Cameroon, Canada, China, Costa Rica, Denmark, Egypt, France, Germany, Hungary, India, Iran (Islamic Republic of), Italy, Japan, Kenya, Mexico, Morocco, Nigeria, Russian Federation, Saudi Arabia, Singapore, Spain, Sudan, Thailand, United Kingdom of Great Britain and Northern Ireland, United States of America and Uruguay.

5. The session was attended by observers from the following States: Australia, Bolivia, Brazil, Cote d'Ivoire, Finland, Indonesia, Israel, Micronesia (Federated States of), Pakistan, Philippines, Romania, Sweden, Switzerland and Venezuela.

6. The session was attended by observers from the following international organizations: Economic Commission for Europe (ECE), United Nations Conference on Trade and Development (UNCTAD), European Community (EC), Hague Conference on Private International Law, Cairo Centre for International Commercial arbitration, European Banking Federation, International Association of Ports and Harbors (IAPH), International Chamber of Commerce (ICC), Society for Worldwide Interbank Financial Telecommunications S.C. (SWIFT) and World Assembly of Small and Medium Enterprises (WASME).

7. The Working Group elected the following officers:

Chairman: Mr. José-María Abascal Zamora (Mexico);

Rapporteur: Mr. Essam Ramadan (Egypt).

8. The Working Group had before it a note by the Secretariat containing an outline of possible rules on the legal aspects of electronic data interchange (EDI) (A/CN.9/WG.IV/WP.55).

9. The Working Group adopted the following agenda:

1. Election of officers;

2. Adoption of the agenda;

3. Outline of possible rules on the legal aspects of electronic data interchange (EDI);

4. Other business;

5. Adoption of the report.

I. DELIBERATIONS AND DECISIONS

10. The Working Group considered the issues discussed in the note by the Secretariat (A/CN.9/WG.IV/WP.55). The deliberations and conclusions of the Working Group are set forth below in chapters II to VIII. The Secretariat was requested to prepare, on the basis of those deliberations and conclusions, a first draft set of articles, with possible variants, on the issues discussed.

II. SCOPE AND FORM OF UNIFORM RULES

A. Substantive scope of application

1. Notion of EDI

11. The Working Group resumed its general discussion of the notion of EDI, a discussion which, for lack of time, it could not complete at its previous session, after it ended its first review of the legal issues involved.

12. At the outset, the Working Group confirmed the decision made at its previous session that, in addressing the subject matter before it, it would have in mind a broad notion of EDI, covering a variety of trade-related uses of EDI that might be referred to broadly under the rubric of "electronic commerce" (see A/CN.9/360, paras. 28-29), although other descriptive terms were also proposed. It was recalled that among the means of communication encompassed in the notion of "electronic commerce" were the following modes of transmission based on the use of electronic techniques: communication by means of EDI defined narrowly as the computer-to-computer transmission of data in a standardized format; transmission of electronic messages involving the use of either publicly available standards or proprietary standards; transmission by electronic means of free-formatted text. It was also noted that, in certain circumstances, the notion of "electronic commerce" might cover the use of techniques such as telex and telecopy.

13. Examples were given of situations where digitalized information initially dispatched in the form of a standardized EDI message might, at some point in the communication chain between the sender and the recipient, be forwarded in the form of a computer-generated telex or in the form of a telecopy of a computer print-out. It was generally agreed that such situations should be covered by the uniform rules, based on a consideration of the users' need for a consistent set of rules to govern a variety of communication techniques that might be used interchangeably. More generally, it was agreed that, as a matter of principle, no communication technique should be excluded from the scope of the uniform rules since future technical developments might need to be accommodated.

14. Differing views were expressed as to whether the Working Group should attempt, prior to discussing the content of the uniform rules, to define more expressly the scope of the uniform rules and whether, for that purpose, it should attempt to define the term "EDI". One view was that such an exercise was necessary to set forth the working assumptions for the continuation of deliberations by the Working Group. It was stated that a definition of EDI would usefully set out the scope of the uniform rules since it might not be immediately clear whether certain modes of communication which combined the electronic transmission of dematerialized data and a reliance on paper (e.g., telex and telecopy) were to be considered as falling in all instances within the notion of EDI. Support was expressed in favour of adopting as a working assumption a definition of EDI that would expressly encompass telex and telecopy.

15. Another view was that expressly including telex and telecopy in the scope of the uniform rules was inappropriate since those means of communication relied in part on the use of paper. It was stated that the Working Group should primarily focus its work on establishing rules for the particular legal issues that derived from the use of computer technology. It was generally agreed that the preparation of the uniform rules should not lead the Working

Group into engaging in an overall revision of the numerous rules established by national legal systems in the context of the use of paper.

16. It was noted that participants in international trade increasingly used the technique of telecopy (referred to also as telefax) to transmit images of paper documents. It was also noted that, as a result of technical differences between telecopy and the sending of digital data over computer-to-computer links, there were differences between the two techniques as regards, for example, authentication methods and the ability to discover errors in transmission. In view of those differences, it was suggested that there might be a need for special rules applicable to telecopy. The Secretariat was requested to study, in preparing draft provisions of the uniform rules, whether any special provisions were necessary to address particular features of telecopy.

17. With respect to the scope of the uniform rules, it was also suggested that the Working Group should not focus its work on the various communication techniques that might be included in a definition of EDI. Instead, it should focus on the functions performed through the use of paper or of a medium other than traditional paper, irrespective of whether the data were sent as a message or stored as a computer record, and establish the conditions under which data recorded on a medium other than paper would be given the same legal value as that of data imposed on a traditional paper document. It was generally felt that focusing on the functions rather than attempting to list and define the various techniques used for transmitting and storing the data would be more in line with the need to provide uniform rules that were not tied to a specific stage of technical development. The uniform rules might thus be described as "media-neutral".

18. After discussion, the Working Group was agreed that, having the above-mentioned general notion of EDI or "electronic commerce" in mind for the purpose of establishing the scope of the Working Group's task and the substance of the uniform rules, it would leave the matter of a specific definition of EDI to be reconsidered at a later stage.

19. As regards the terminology to be used in the preparation of the uniform rules, it was felt that the Working Group should attempt to identify a common denominator to be used in the general description of the various communication techniques that might be covered by the uniform rules. It was suggested that, in view of the adoption of the broad notion of "electronic commerce", it might be misleading to continue making reference to the term "EDI". It was recalled that almost all definitions of EDI currently in use, or suggested for use, among EDI users (see A/CN.9/WG.IV/WP.55, para. 9) somehow limited the scope of EDI to computer-to-computer communications and to data transmitted in a standardized format. A new terminology might thus reflect more accurately the extensive scope and the various layers of issues to be addressed in the uniform rules.

20. Various suggestions were made as to possible substitutes for the term "EDI". Support was expressed in favour of a suggestion to use the term "electronic commerce", which was described as sufficiently broad to encompass all existing communication techniques. However, it was stated that a reference to "electronic" techniques might be overly restrictive in view of possible future technical developments involving optical or other non-electronic means of transmission. Support was also expressed in favour of a suggestion to include a reference to "digital information". However, the view was expressed that such a reference might be overly comprehensive since telephone communications might also be described as the transmission of

digital information. Support was also expressed in favour of other suggestions to adopt wording mentioning "paper-less trade" or otherwise referring to the "dematerialization" of the data. However, it was noted that the current practice of EDI seemed unlikely to result in complete disappearance of paper-based documents. It was generally felt that it might be inappropriate to deviate from the use of the term "EDI", which had become the term commonly used to describe the use of computers for the movement of business information by telecommunications, irrespective of whether narrower technical definitions of EDI were also in use.

2. Domestic and international transactions

21. The Working Group considered the question whether the uniform rules should be limited in scope to international cases or whether they should cover both international and domestic cases.

22. According to one view, the uniform rules should not be limited to international cases. One reason given was that policy considerations underlying the need to prepare the uniform rules and their content were the same in international as well as domestic cases. In particular, the purpose of the uniform rules was to provide legal certainty to parties that chose to keep their records in electronic form and there was no reason to limit that legal certainty only to records relating to international trade. Enterprises using EDI tended to use the same technical equipment and procedures for creating, transmitting and storing information in domestic as well as international trade; it was thus in the interest of those enterprises that all information be treated the same manner. Furthermore, it would be difficult to establish a clear and workable criterion for distinguishing domestic cases from the international ones. For example, an EDI record might be considered domestic on the ground that it was generated, transmitted and stored within one State; yet, if such a record became relevant in dispute-settlement proceedings in a foreign State, the inapplicability of uniform rules to such a record might create difficulties in using the record in that foreign State. It was suggested that the existence of two sets of rules for international and domestic electronic commerce would create barriers to international trade by introducing great uncertainty for users. It was added that, if the uniform rules were cast in the form of a model law, a State would be free to restrict the applicability of individual uniform provisions to international cases if that was considered appropriate.

23. According to another view, the uniform rules should be limited to international cases since the purpose of the uniform rules was to facilitate international trade. It was said that national laws on certain issues relating to EDI (e.g., evidentiary issues) were too diverse to allow for a total unification of law and that States would be more likely to accept unified solutions if those solutions did not entirely replace rules governing domestic relations. It was stated in reply that a conflict between the uniform rules and national rules on domestic EDI was unlikely to arise since few States had developed rules on EDI. It was pointed out that, if the uniform rules were cast in the form of a model law dealing with international trade, they could also be implemented domestically if States so wished.

24. To the extent that legislative policies underlying international EDI overlapped with such policies underlying domestic EDI, the Working Group provisionally considered it more prudent, once unified rules on international EDI were established and had proven themselves in practice, to leave it up to the States to extend the unified regime also to domestic EDI. Furthermore, it was pointed out that the Commission had traditionally focused on rules

facilitating international trade, and that the current project should follow that tradition.

25. As to the criterion for defining international cases, some support was expressed for a solution according to which a case would be treated as international if the originator and the recipient of the message were in different States. Another possible solution was a flexible formula according to which a case would be treated as international if the EDI message or its subject-matter related to more than one country or if the EDI message affected international trade; the Working Group was reminded that such a flexible solution was adopted in some States for distinguishing between international and domestic arbitrations.

Message as primary subject-matter of uniform rules

26. In the context of the discussion on international and domestic EDI, the Working Group discussed the question of the subject-matter of the uniform rules. The Working Group was generally agreed that the initial focus of the uniform rules should be EDI messages and not transactions or contracts that resulted from the exchange of EDI messages, except as necessary at that stage. Dealing in the uniform rules with transactions or contracts would result in the creation of special contract rules alongside traditional contract law, which would be an undesirable result. Nevertheless, it was noted that, to the extent the uniform rules would deal with the use of EDI for the purpose of contract formation, it might be necessary for the uniform rules to touch upon issues relating to transactions to which messages were related.

27. As to the EDI messages to be addressed by the uniform rules, several suggestions were made. EDI messages should be understood as a broad concept that included, in addition to communications transmitted between parties, also records created by a party but not transmitted to another party, for example because there was an error or breakdown in telecommunications or because the record was intended to remain within the sphere of the party that created the record. It was suggested that, in view of that broader notion of message, it might be more appropriate to use in the uniform rules the term "records", a term that covered both messages and data that had not been transmitted between parties.

28. As to the types of messages to be covered, it was suggested that the uniform rules should not be restricted to validating EDI messages that expressed a will of the party to be bound, but should include a wide variety of messages that might become legally relevant between parties. Such legally relevant messages included, for example, pre-contractual communications, various types of notifications or requests made during the performance of contracts, and claims arising from the breach of contracts.

3. Consumer transactions

29. There was general agreement in the Working Group that the uniform rules should not address special issues relating to the protection of consumers.

30. According to one view the uniform rules might provide that they did not apply to messages that originated from a party operating otherwise than in the course of a business or to messages addressed to a person for a purpose other than the business of the addressee.

31. The prevailing view, however, was that the uniform rules should apply to all messages, including messages to or from consumers, but that it should be

made clear that the uniform rules were not intended to override any consumer-protection law. It was pointed out that the uniform rules themselves were likely to improve the position of consumers by increasing legal certainty in their transactions, and that, in addition to that improvement, the uniform rules should open the way for the legislators to provide special protection to consumers.

32. The proponents of the prevailing view considered that the uniform rules should not provide a definition of consumer transactions. Setting forth such a definition would not be appropriate in view of the decision that the uniform rules should focus on EDI messages or records and not on the underlying contracts or other obligations for the purposes of which the messages were issued or the data were stored. As to whether the indication that the uniform rules were not intended to override any consumer-protection law should be given in the body of the uniform rules or in a footnote appended to the uniform rules, it was generally felt that, in view of the absence of a definition of consumer transactions, the matter would be better dealt with in a footnote.

33. It was observed that it might be appropriate to bear in mind a likely interest of commercial parties in having a degree of certainty as to when a given EDI message or transaction was subject to special consumer-protection law. Another observation was that special laws relating to consumers might provide not only for special rights of consumers but also for special duties or standards of behaviour.

B. Form of uniform rules

34. The Working Group was agreed that it should proceed with its work on the assumption that the uniform rules should be prepared in the form of statutory rules. The Working Group, however, deferred a final decision as to the specific form that those statutory rules should take.

III. DEFINITIONS AND GENERAL PROVISIONS

A. Definitions

1. Parties to an EDI transaction

35. It was considered that, in view of the focus of the uniform rules on EDI messages, the uniform rules might have to contain a definition of the sender and the receiver of the message and, depending on the content of the rules to be prepared, possibly also other parties such as the party who created or stored a message or a third party who provided value-added services regarding the message. As to third-party service providers, it was observed that the types of services provided by them varied greatly and that, as a consequence, any definition of third-party service providers would have to be very general, which would reduce its usefulness.

2. EDI, EDI messages and other terms

36. The Working Group recalled its deferral of a final decision as to the definition of EDI (see para. 18 above). It was also agreed that the introduction of definitions of other terms in the uniform rules might need to be considered in due course.

B. General provisions

1. Party autonomy under the uniform rules

37. The Working Group was generally agreed that the uniform rules should contain a general recognition of party autonomy. However, it was also agreed that in formulating individual provisions of the uniform rules the Working Group would, in accordance with public policies and with the need to maintain fair relations in EDI, consider the need for limiting the freedom of parties to deviate by agreement from a provision. It was pointed out that, to the extent the uniform rules would deal with the relationship between EDI networks and users of their services, there might be a need to protect the interests of parties that were in a weaker bargaining position.

2. Interpretation of the uniform rules

38. The Working Group discussed the question whether the uniform rules should contain a rule, modelled on article 7(1) of the United Nations Convention on Contracts for the International Sale of Goods (hereinafter referred to as the United Nations Sales Convention), according to which, in the interpretation of the uniform rules, regard should be had to the international character of the uniform rules and to the need to promote uniformity in the application of the uniform rules, and a rule, modelled on article 7(2) of that Convention, according to which matters governed by the uniform rules but not expressly settled in them should be settled in conformity with the general principles on which the uniform rules were based.

39. Views were expressed that provisions along the lines of article 7 of the United Nations Sales Convention would be useful if the uniform rules were to be cast in the form of a convention. For the case, however, that the uniform rules were to take the form of a model law, there was considerable support for not including such provisions. It was said that a model law assumed a degree of flexibility in the enactment of its provisions and that the discussed interpretation rules would be inconsistent with such flexibility.

40. Another view was that the purpose of a model law in the area of EDI was to unify and harmonize national laws and that, in order to underscore that purpose, it would be useful to remind the users of laws based on the model law of its international origin and the desirability of uniformity in its interpretation. It was added that the interpretation rule could be drafted in such a manner that it would take account of the possibility that a State might decide to deviate from the text of the model law.

41. The Working Group also discussed the question whether the uniform rules should provide standards by which acts or declarations by participants in EDI were to be interpreted. The suggested standards, modelled on article 8 of the United Nations Sales Convention, that the Working Group considered were: (1) the intent of the party where the other party knew or could not have been unaware of what the intent was; and (2) the understanding that a reasonable person of the same kind as the other party would have had in the same circumstances.

42. Opposition was expressed to the inclusion of such standards of interpretation in the uniform rules on the ground that they would give rise to uncertainties and difficulties in application. In particular, it was stated that a rule on interpretation of the intent of a party might raise difficulties in connection with the expression of intent by means of a computer or other automatic device operating without direct human

intervention. Other views were that the Working Group should consider such standards of interpretation at a later stage if it were to be decided that the uniform rules should deal with the question of formation of contracts through EDI.

3. Arbitration and conflict of laws

43. The Working Group agreed to reconsider those issues at a later stage of its deliberations.

IV. FORM REQUIREMENTS

A. Preliminary discussion

44. Prior to engaging in a general discussion of the way in which applicable form requirements could be made compatible with the use of EDI, the Working Group considered specific questions that might affect the scope of the uniform rules.

1. Relationships between EDI users and public authorities

45. The Working Group discussed a possible distinction between the admissibility of EDI messages in commercial arbitration or judicial proceedings and the acceptance and use of such messages by administrative authorities.

46. In favour of adopting such a distinction, the view was expressed that the uniform rules should not deal with the mandatory form requirements that might be imposed on corporations and individuals for regulatory or other administrative purpose (e.g., tax and securities laws, banking supervisory regulations). It was recalled that the Working Group, at its previous session, had decided that recommending changes in administrative rules at the national level would not be an appropriate focus of work by the Commission. At the same time, it was recognized that recommendations that were made with respect to the removal of obstacles to the use of EDI at the international level might help to foster the removal of such obstacles in the administrative sphere (A/CN.9/360, para. 52).

47. Another view was that it would be inappropriate to draw a general distinction between form requirements established for the admissibility of EDI messages in commercial arbitration or judicial proceedings and form requirements established for the acceptance and use of such messages in the administrative sphere. It was stated that, in a number of cases, the two types of requirements served similar purposes. For example, requirements regarding the use of computer records as evidence by public authorities for accounting and tax purposes should not be artificially distinguished from requirements regarding the acceptability of computer records as evidence by courts. It was stated that, consistent with the "functional approach" agreed upon at the previous session, the uniform rules should establish the conditions under which computer data could be safely used as a substitute for data recorded on paper. In that respect, there seemed to exist no difficulty in recognizing that such a functional equivalent to paper could be used not only between private EDI users and for litigation purposes but also in the relationships between EDI users and public authorities.

48. After discussion, the Working Group was agreed that the various views expressed were not mutually incompatible. It was agreed that, while the uniform rules should not expressly deal with the situations where a form requirement was prescribed by an administration for reasons of public policy, the sphere of relationships between EDI users and public authorities should not be excluded from the scope of the uniform rules. However, it was also agreed that the adoption of such an integrated approach to the admissibility of computerized data as evidence should not create the assumption that public authorities would implement and maintain EDI technology at a cost that they might not be prepared to incur.

2. Transactions involving special form requirements

49. The Working Group was agreed that the purpose of the uniform rules was not to deal with transactions for which, in a number of countries, some form of public authentication or registration was required. Examples of such transactions involved the sale of real estate and the sale of registered moveables such as aircrafts and vessels. It was agreed that the uniform rules should focus on commercial relationships related to the trading of goods and services.

B. Functional equivalent for "writing"

1. Mandatory requirement of a writing

50. The Working Group was agreed that a "functional equivalent" approach should be taken with respect to existing requirements that data be presented in written form. The view was expressed that the Working Group should identify the essential functions that were traditionally fulfilled by writing, with a view to establishing the conditions under which EDI messages would be deemed to fulfil those functions and thereby receive the same legal recognition as paper documents.

51. It was recalled that the Working Group, at its previous session, had considered that a writing served the following functions: (1) to provide that a document would be legible by all; (2) to provide that a document would remain unaltered over time and provide a permanent record of a transaction; (3) to allow for the reproduction of a document so that each party would hold a copy of the same data; (4) to allow for the authentication of data by means of a signature; and (5) to provide that a document would be in a form acceptable to public authorities and courts (see A/CN.9/360, para. 42). In addition, the following functions were suggested as characteristics of writing: (6) to finalize the intent of the author of the writing and provide a record of that intent; (7) to allow for the easy storage of data in a tangible form; (8) to ensure that there would be tangible evidence of the existence and nature of the intent of the parties to bind themselves; (9) to help the parties be aware of the consequences of their entering into a contract; (10) to facilitate control and subsequent audit for accounting, tax or regulatory purposes; and (11) to bring legal rights and obligations into existence in those cases where a writing was required for validity purposes.

52. In view of the above-mentioned suggestions, a note of caution was struck about adopting an overly comprehensive notion of the functions performed by writing. It was stated that the existing requirements that data be presented in written form, though generally not focusing on the functions to be performed by a writing, often combined the requirement of a writing with concepts distinct from writing, such as signature. It was generally agreed

that, when adopting a functional approach, attention should be given to the fact that the requirement of a writing should be considered as the lowest layer in a hierarchy of form requirements, which provided distinct levels of reliability, traceability and unalterability with respect to paper-based documents. The requirement that data be presented in written form (which was described as a "threshold requirement") should thus not be confused with more stringent requirements such as "signed writing", "signed original" or "authenticated legal act". For example, a written document that was neither dated nor signed, and the author of which either was not identified in the written document or was identified by a mere letterhead, would be regarded as a writing although it might be of little evidential weight in the absence of other evidence (e.g., testimony) regarding the authorship of the document. It was also pointed out that the notion of unalterability should not be considered as built into the concept of writing as an absolute requirement since a writing in pencil might still be considered a writing under certain existing legal definitions. In general, it was felt that notions such as "evidence" and "intent of the parties to bind themselves" were to be tied to the more general issues of reliability and authentication of the data and should not be included in the definition of a "writing". In addition, questions were raised as to whether intention should be a focus of the uniform rules. It was also generally felt that a distinction needed to be made between the acceptability of data as evidence and the evidential value, or weight, carried by such data.

53. In that connection, it was noted that certain electronic techniques were capable of performing certain functions of paper-based documents with a much higher degree of reliability and speed, especially with respect to the identification of the source and content of the data. However, it was generally agreed that the adoption of the functional-equivalent approach should not result in imposing on EDI users more stringent standards of security (and the related costs) than in a paper-based environment.

54. As regards the method to be used for defining a functional equivalent to paper-based documents, two possible approaches were suggested. One approach relied on an extension of the definition of "writing" to encompass EDI techniques. It was proposed that a definition of writing along the following lines might be used as a basis for discussion:

> "Writing includes but is not limited to a telegram, telex and any other telecommunication which preserves a record of the information contained therein and is capable of being reproduced in tangible form."

55. Support was expressed in favour of the adoption of such a definition, with possible refinements regarding the capability of the data of being reproduced in human-readable form or in any manner that would be required by applicable law.

56. The view was expressed, however, that it might be inappropriate to adopt for general use a definition of "writing" that might overly stretch the common understanding as to what "writing" consisted of. The view was expressed that such an extended definition might lead to the undesirable result of validating the dematerialization of instruments for which States might wish to maintain the paper-based form. Examples were given regarding the use of paper in the area of cheques and securities. It was thus suggested that several definitions might need to be considered, based on a case-by-case review of the individual situations where a rule of law required the presentation of data in written form. It was noted that such an approach might encounter practical difficulties in view of the large number of situations where such rules existed.

57. Another approach relied on the introduction of a new concept that would state the conditions under which, where applicable law required data to be presented in writing, the requirement would be deemed to be fulfilled. The following proposal was made:

> "In legal situations where "writing" is required, that term shall be taken to mean any entry on any medium able to transmit in toto the data in the entry, which must be capable of being reproduced in human-readable form."

58. Support was expressed in favour of the proposal. It was suggested that the text should be refined by mentioning that the data should be intentionally recorded or transmitted. It was also suggested that the reference to "any medium" should be qualified to exclude paper and that the provision should require that the relevant computer systems should be maintained properly.

59. Another proposal was to provide that, unless otherwise agreed by the parties, any form of electronic recording of information would be deemed to be functionally equivalent to writing, provided it could be reproduced in visible and intelligible form (or tangible and readable form), and provided it was preserved as a record.

60. Yet another proposal was made to adopt the following provisions:

> "(1) In this article, the following expressions have the following meanings:
>
> (a) 'an information system' means any computer or other technology by means of which information may be recorded, processed or communicated;
>
> (b) 'The originator of the information' means the person by whom the record of the information was authenticated, or, where the record is not authenticated,
>
> (i) in the case of a record composed on behalf of any person, the person on whose behalf the record was composed, and
>
> (ii) in any other case, the person by whom the record was composed; and
>
> (c) 'a relevant rule of law' means a rule of law (including a contractual provision) which
>
> (i) regulates the manner in which a communication may be made between persons in different States, the nature of a record of any such communication or the conditions in which any such record may be kept; or
>
> (ii) provides for certain consequences conditional upon the manner in which any such communication is made, the nature of any such record or the conditions in which any such record is kept.
>
> "(2) For the purpose of any relevant rule of law which requires a document in writing, or a document which is in writing and signed under hand (or otherwise authenticated), or provides for certain consequences conditional upon the existence of such a document, a record which,

although not in writing and not signed under hand, purports to be a true and complete representation of the information which the written document (if it existed) would contain, shall be sufficient, if the conditions specified in paragraph (3) below are satisfied.

"(3) The conditions referred to in paragraph (2) above are:

(a) that the originator of all the information of which the record is composed is the person by whom the written document would have been authenticated, or by whom or on whose behalf the written document would have been composed;

(b) that the identity of the originator of the information is properly authenticated;

(c) that the information of which the record is composed was registered and stored by an information system which:

(i) records the date on which and the sequence in which it registers such information;

(ii) is capable of producing a legible statement recording that date and sequence; and

(iii) was operating properly at the time at which the information is purported to have been registered and stored;

(d) that the legible statement of the date on which and sequence in which the information was registered:

(i) is certified by the person responsible for causing the statement to be produced as being an accurate statement of the date and sequence recorded by the information system; and

(ii) corresponds to the time at which the written document, to which the record is purported to correspond, would have been created or (if later) would have been signed or otherwise authenticated;

(e) that all appropriate steps have been taken by the originator of the information, and by the person or persons responsible for the operation of the information system which registered it, to ensure that the information has at all times been secure against alteration in the course of transmission or recording or subsequently; and

(f) that the information system which registered the information is capable of producing a legible statement of the information contained in the record, which records the authentication of the identity of the originator of that information.

"(4) For the purpose of paragraph (3)(b) above, the identity of the originator of the information is properly authenticated if the manner of authentication complies with any procedures which are sufficient in the circumstances to enable the authentication to be absolutely or substantially relied upon.

"(5) Where any rule of law referred to in paragraph (2) above derives solely from a contractual provision, the parties to the contract may by

agreement substitute a different standard of authentication from that referred to in paragraph (4) above, for the purpose of the legal relations between themselves.

"(6) For the purpose of paragraph (3)(c)(iii) above, the information system is to be presumed to have been operating properly at the relevant time unless the contrary is shown.

"(7) Subject to the preceding paragraphs of this article, for the purpose of any rule of law which requires information to be communicated or recorded in legible form, or provides for certain consequences conditional upon information being so communicated or recorded, it shall be sufficient if a legible statement of the information is capable of being produced by the information system to which the information was communicated or by which it was recorded.

"(8) This article does not affect any rule of law which:

(a) relates to the creation or disposition of title to any property (whether movable or immovable and whether tangible or intangible) or any interest therein; or

(b) requires, or provides for certain consequences conditional upon, compliance with any formalities additional to those referred to in paragraph (1) above."

61. Support was expressed in favour of the general approach taken in the proposal, under which, rather than attempting to provide a general definition of a writing, the uniform rules would describe the conditions under which computer data would carry legal significance. However, it was stated that the definition was too complex and dealt with issues that went beyond the definition of a functional equivalent of a writing. The view was also expressed that the proposal would result in establishing too stringent requirements that might inhibit the use of EDI. It was stated that a provision defining the functional equivalent of a "writing" should be concise and that additional rules as to the evidential weight and evidential admissibility of EDI messages should be dealt with in other provisions of the uniform rules.

2. Contractual definition of a writing

62. It was generally agreed that the uniform rules should contain a provision designed to eliminate the doubts that might exist in some legal systems as to the validity of privately-agreed definitions of "writing". However, it was also agreed that such validation of private agreements should be so drafted that States could limit the freedom of parties for certain specific types of documents. The view was also expressed that, since the aim of the uniform rules was to provide statutory rules that would validate the use of EDI, the need for privately-agreed definitions of "writing" should decrease with the adoption of the uniform rules.

C. Authentication of EDI messages

63. With a view to determining whether a functional equivalent of a signature requirement could be established in an electronic environment, the Working Group engaged in a review of the functions performed by a signature in a paper-based environment. It was generally agreed that among the functions of

a handwritten signature were the following: to identify a person; to provide certainty as to the personal involvement of that person in the act of signing; to associate that person with the content of a document. It was noted that, in addition, a signature could perform a variety of functions, depending on the nature of the document that was signed. For example, a signature might attest to the intent of a party to be bound by the content of a signed contract; the intent of a person to endorse authorship of a text; the intent of a person to associate itself with the content of a document written by someone else; the fact that, and the time when, a person had been at a given place.

64. It was noted that, alongside the traditional handwritten signature, there existed various types of procedures, sometimes also referred to as "signatures", which provided various levels of certainty. For example, in some countries, there existed a general requirement that contracts for the sale of goods above a certain amount should be "signed" in order to be enforceable. However, the concept of a signature adopted in that context was such that a stamp, a typewritten signature or a printed letterhead might be regarded as sufficient to fulfil the signature requirement. At the other end of the spectrum, there existed requirements that combined the traditional handwritten signature with additional security procedures such as the confirmation of the signature by witnesses.

65. The view was expressed that it might be desirable to develop functional equivalents for the various types and levels of signature requirements in existence. Such an approach would increase the level of certainty as to the degree of legal recognition that could be expected from the use of the various means of authentication used in EDI practice as substitutes for "signatures". However, it was widely felt that the notion of signature was intimately linked to the use of paper and that there might exist no technical solutions for accommodating all existing types and uses of "signature" in a dematerialized environment. Furthermore, it was noted that any attempt to develop rules on standards and procedures to be used as substitutes for specific instances of "signatures" might create the risk of tying the uniform rules to a given state of technical development.

66. A more comprehensive approach that was suggested was to include in the uniform rules a provision that would state the general conditions under which EDI messages would be regarded as authenticated with sufficient credibility and would be enforceable in the face of signature requirements which currently presented barriers to electronic commerce. Various suggestions were made as to possible distinctions to be borne in mind when preparing such a general provision. It was further suggested that the Working Group deal with the issue of authentication separately from signature requirements.

67. A suggestion was to distinguish between the situation in which EDI users were linked by a communication agreement and the situation in which parties had no prior contractual relationship regarding the use of EDI. Where parties were linked by a communication agreement, messages should be regarded as authentic provided that the parties had agreed on a commercially reasonable method of authentication and they had complied with that method. In the absence of a communication agreement between the parties, a message should be regarded as authentic provided that it was authenticated by a method that was commercially reasonable under the circumstances. In determining whether a method of authentication was commercially reasonable, factors to be taken into account might include the following: (1) the status and relative economic size of the parties; (2) the nature of their trade activity; (3) the frequency at which commercial transactions took place between the parties; (4) the kind

and size of the transaction; (5) the status and function of signature in a given statutory and regulatory environment; (6) the capability of the communication systems; (7) the authentication procedures set forth by communication system operators; and (8) any other relevant factors.

68. Support was expressed in favour of that suggestion, which was said to provide authentication criteria that would be sufficiently flexible to meet the needs of practitioners. However, the view was expressed that it would be inappropriate to limit the contractual freedom of the parties to agree on any method of authentication, even though that method might be considered unreasonable by reference to objective criteria. The view was also expressed that, in most practical situations, the matter of authentication was dealt with in the context of the relationship between EDI users and third-party service providers, who placed various possible levels of authentication at the disposal of users. It was stated in reply that the notion of "commercial reasonableness" was useful in that it provided a minimum standard of authentication to be complied with in the absence of other requirements resulting from contractual arrangements or regulatory requirements. At the same time, the view was expressed that such a minimum standard should not impinge on the discretion of the States to establish mandatory form requirements for certain specified types of transactions.

69. As regards the reference to "commercial reasonableness", examples were given of situations (involving either commercial partners engaged in a continuous trading relationship or parties that had no prior contractual relationship) where the methods of authentication used in practice might be considered as unreasonable from an objective perspective. It was pointed out that, similarly, in a paper-based environment, certain methods of authentication currently used might be regarded as commercially unreasonable. The view was expressed that the uniform rules, while they should be drafted so as to encourage general use of authentication procedures in EDI practice, should avoid creating authentication requirements more stringent than those at play in a paper-based environment.

70. The objectiveness of a criterion based on "commercial reasonableness" was also said to be questionable. It was stated that the use of such a notion might result in increased uncertainty as to what methods of authentication would be regarded as acceptable in any given jurisdiction. Furthermore, it was stated that the use of the word "commercial" might create an undesirable dichotomy between the "commercial" uses of EDI and other business uses of EDI involving parties that might, in certain jurisdictions, not be regarded as conducting a "commercial" activity (e.g., certain categories of professionals).

71. After discussion, the Working Group was generally agreed that a message that was required to be authenticated should not be denied legal value for the sole reason that it was not authenticated in a manner peculiar to paper documents. As regards the issues of evidence, it was also agreed that the probative value of a message might result not only from compliance with a given method of authentication but also from other elements (e.g., testimonial evidence).

72. The view was expressed that it would be useful to establish a minimum standard of authentication for EDI messages that might be exchanged in the absence of a prior contractual relationship. It was also stated that, even if the parties used EDI communications in the context of a communication agreement, it might be useful to provide guidance in the uniform rules as to what might constitute an appropriate method of authentication. However, the

view was also expressed that the question of authentication should be left entirely to the discretion of the parties.

73. As to whether the uniform rules should state the consequences of following the prescribed or agreed form of authentication, various suggestions were made. One suggestion was that, in the case where a reasonable method of authentication had been applied, the message would be regarded as binding upon the purported sender. Another suggestion was that, unless otherwise agreed by the parties or provided by law, an authenticated message would constitute prima facie evidence as to the authenticity of its content. Those suggestions were objected to on the ground that they might overburden the purported sender of a message, who should neither be bound by the content of a forged message nor obliged to prove that it had not sent that message.

74. It was suggested that, in the preparation of uniform rules on the issue of authentication, it might be useful to bear in mind a distinction between the authentication of a message with respect to its source (i.e., the identity of its sender) and the authentication with respect to the content of a message.

75. Various suggestions were made in connection with a possible definition of "authentication". It was suggested that authentication could be defined as "the process of proving the source and content of the message". Another suggestion was to define authentication as "the process by which an intention is confined in a message".

76. Yet another suggestion was to provide that:

> "(1) Where the signature of any person is necessary for the purpose of any rule of law, any method of authentication which purports to have been used by or on behalf of that person shall be a sufficient authentication for that purpose in place of signature if it is of a kind sufficient to constitute evidence of substantial probative value that that person intended to approve the content of the information to which it has been applied.
>
> "(2) Where the signature of any person is necessary for any purpose other than for the purpose of any rule of law (whether or not it is required by any agreement), any method of authentication which purports to have been used by or on behalf of that person in place of signature shall be treated as a sufficient authentication for that purpose if it is of a kind capable of constituting evidence of a probative value sufficient in all the circumstances relevant to recording or communicating the information to which it has been applied, that that person intended to approve the content of that information".
>
> "(3) The operation of paragraph (2) above may be excluded by any legally enforceable undertaking or agreement".

The view was expressed that that suggestion did not deal with formal requirements of signatures.

D. Requirement of an original

1. Functional equivalent

77. The Working Group noted that a number of national laws required, in different contexts, the presentation of a paper document in its original and

that such requirements constituted an obstacle to the use of EDI.

78. During the consideration of possible solutions addressing that obstacle, the Working Group made a distinction between two types of requirements of an original. The first one was a requirement contained in rules of evidence according to which, when a writing was to be presented in support of a claim, the original document was required as the best evidence. In the same group were also requirements according to which, for reasons of administrative supervision, certain documents (e.g., invoices) were to be kept and presented in the original. The second type of requirement concerned documents that incorporated a right or title (e.g., bills of lading, warehouse receipts and negotiable instruments); in order to obtain or transfer the right or title incorporated in such a document it was necessary to obtain or transfer the possession of the original document.

79. The Working Group agreed that these two types of requirements presented different kinds of obstacles to the use of EDI and that any statutory provisions addressing those obstacles should treat them separately. The Working Group concentrated its discussion on the first type of requirement. As to the second type of requirement, it was necessary to study further the possibilities and the need for statutory solutions.

80. A proposal was made to address the question of an original by a provision along the following lines:

> "A message sent electronically on any medium shall be considered to be an original with the same evidential value as if it had been drafted on paper, provided that the following conditions are met: originality is attributed to the message by the originator of the information; the message is signed and bears the time and date; it is accepted as an original, implicitly or explicitly, through the addressee's acknowledgement of receipt".

81. Various comments were made regarding the proposed provision. One comment was that the scope of the provision, which was limited to messages, should be expanded to cover records irrespective of whether a record had been communicated between parties.

82. While it was noted that it was preferable not to link the provision to any particular technique or medium, the expression "any medium" was questioned as being too broad and as encompassing, for example, also voice telephony.

83. Another comment, which concerned the term "signed", was that the technique of "signing" records in a computer environment was fundamentally different from paper-based signatures, that the level of security provided by a computer authentication depended on the method used and that the provision gave no guidance as to the level of security to be provided by the computer authentication. It was noted that certain forms of computer authentication gave at least the same if not better security than paper-based signatures.

84. It was noted that the proposed text did not resolve the question of when or how the attribution of originality was to be made, in particular in a situation where a message or a record was subsequently amended and only the amended version was designated as an original.

85. It was also said that the expression "acknowledgement of receipt" should not be confounded with the addressee's agreement with the content of the message. It was suggested that it would be clearer to speak of the

addressee's acknowledgement of the character of originality instead of the acknowledgement of receipt. The view was also expressed that the legal recognition of an EDI message as an equivalent for a paper original should not be made generally dependent upon acceptance by the addressee.

86. Another comment made was that the requirement contained in the proposed provision was more onerous than for paper-based communications since it required the functional equivalents of signature, timing, dating and receipt as well as originality.

87. It was suggested that the concept of originality was a concept limited to traditional paper-based documents and that, in view of the manner in which computer records were created, maintained and communicated, it was impossible to speak of original computer records. On the basis of this observation, it was suggested that the uniform rules should, instead of establishing a fiction that a computer record was to be considered an original, provide that any legal requirement for a document to be presented in the original was satisfied if certain conditions were met. Another suggestion was to provide that EDI records were not barred from being presented in evidence solely as a result of the application of a requirement that a document had to be presented in the original. It was observed that such a provision addressing the admissibility of computer records would not deal with the evidential weight of the EDI records.

88. It was suggested that the concept of originality was linked to the reliability of the information contained in the original document and that therefore the rule establishing a functional equivalent of an original should also address the reliability and management of the computer system used in creating and communicating the message. In that connection it was proposed to include in the uniform rules a provision that the requirement of an original was satisfied if the following conditions were met: (a) there was a reliable identification of the originator of the message and (b) there existed reliable assurance as to the integrity of the content of the message as sent and received.

89. It was observed that in paper-based communications national laws might recognize as acceptable also unsigned and undated documents, and that introducing such requirements for EDI messages might mean imposing additional and unnecessary burdens upon participants in EDI.

90. It was noted that in practice parties might authenticate and designate as originals two or more copies of a given document and that it would be useful to allow such practice also in EDI. It was said that an original was usually the earliest record in time and that the earliest record which could reasonably be expected to be available in view of the use of EDI technology should satisfy the originality requirement.

91. Another suggestion was to provide that:

> "(1) Where it is necessary for the purpose of any rule of law or for the purpose of any question of evidence that a record be an original document,
>
> (a) as between two records containing identical information and properly authenticated by the same person, the record first created and authenticated shall be presumed to be a relevant record; and
>
> (b) as between two records authenticated by the same person but containing information which differs in any respect, each shall be presumed to be a relevant record of the information it contains.

"(2) A relevant record for the purpose of paragraph (1) above shall be deemed to satisfy the requirements of the rule of law in question and to have equivalent evidential weight to an original record.

"(3) Paragraph (1) above shall not apply if it is shown that another record containing identical information and properly authenticated by the same person was the original or was created and authenticated at an earlier date."

2. Contractual rules

92. There was wide support in the Working Group for expressly validating in the uniform rules agreements by parties declaring that an EDI message was to be considered an original or that an EDI message was to be admissible in evidence despite any requirement for an original. It was considered, however, that such provisions on party autonomy should not deal with the requirements for an original in the case where a document incorporated a right or a title and where that right or title had been acquired and transferred by acquiring and transferring the possession of the original document (see paras. 2 and 3 above).

93. Views were expressed that, while the recognition of party autonomy was useful, it was still desirable to provide clear statutory rules that would reduce the need for parties to deal with the requirement for an original by way of private agreements.

94. It was suggested that parties should be able to include such agreements concerning the requirement of originality either in the communication agreement, which addressed the method of electronic communication between the parties, or in the record embodying the contract entered into through EDI.

95. The Working Group considered the question of the effect of an agreement of parties regarding the requirement of originality on a third party who did not participate in the agreement. It was suggested that, while such an agreement was in principle effective only as regards the parties to the agreement, third parties should not be prevented from relying on the agreement for the purpose of having an EDI message admitted in evidence. On the other hand, it was considered that such an agreement could not be invoked against a third party who chose to rely on the statutory requirement that the message had to be presented in the original.

96. It was suggested that the provision recognizing party autonomy should be drafted in such a way that it would not impinge upon the general limits to party autonomy that existed in national laws.

E. Evidential value of EDI messages

1. Admissibility of EDI-generated evidence

97. The Working Group, recalling the considerations at its twenty-fourth session (A/CN.9/360, paras. 44-52), noted that in some jurisdictions there existed no legal obstacles to the admissibility of EDI records in evidence and that those jurisdictions saw no need for rules on admissibility of EDI-generated evidence. The Working Group, however, also noted that in a number of jurisdictions there existed legal obstacles to the admissibility of computer records in judicial or arbitral proceedings. A prominent example of such an obstacle was the "hearsay" rule found in common-law countries (ibid., para. 46).

98. Strong support was expressed for including in the uniform rules a provision declaring EDI records to be admissible evidence in order to eliminate barriers such as those found in the hearsay rule. It was considered that such barriers constituted an undesirable and unnecessary obstacle to the use of EDI in international trade. A suggestion was made that the proposed provision should make it clear that computer-generated evidence, in order to be presented in evidence, had to be in a "tangible" or "human-readable" form.

99. Another view was that an EDI record should be declared admissible evidence subject to showing that the record had been generated and stored in a reliable manner. Yet another view was that admissibility of evidence, a question limited to one group of legal systems, had been addressed and solved in various manners in those legal systems, and that those solutions did not lend themselves to being unified. Instead, countries where there were restrictions on the admissibility of computer-generated evidence should be left to modify those restrictions in the light of developments in the definition of functional equivalents to writing and signature. A concern was expressed that this latter approach would not remove the perceived barriers to electronic commerce.

100. It was observed that particular questions had arisen as to the admissibility of EDI records generated in a network of computers, in particular if computer processing units forming part of the network were located in different States. It was said that, if it were to be necessary, for the admissibility of records processed in a network, to demonstrate by testimony the integrity and reliability of all processing units in the network, it might be difficult or costly to establish admissibility of such records.

101. The Working Group agreed, provisionally, that any rule establishing admissibility of EDI records should not modify existing rules concerning the burden of proof or affect the requirement that a record adduced in evidence should be relevant evidence.

2. Weight of EDI-generated records

102. It was generally considered that it was neither possible nor desirable to establish detailed statutory rules for weighing the probative value of EDI records. It was considered most appropriate to leave the question of weight of evidence to the discretion of the trier of fact. It was, however, considered useful to include in the uniform rules factors or guidelines to be taken into account in evaluating computer-generated evidence. The purpose of these factors or guidelines would be to assist the trier of fact in the taking of evidence and to increase the level of certainty in the use of EDI records, without thereby eliminating the principle that it was up to the trier of fact to evaluate evidence taking into account all relevant circumstances. The following factors were mentioned as suitable for inclusion in the uniform rules: method of recording data; adequacy of measures protecting against alteration of data; proper maintenance of data carriers; and methods used for authentication of EDI messages.

3. Contractual rules

103. It was observed that a number of international and national organizations had prepared or were preparing model EDI agreements that addressed, *inter alia*, the question of admissibility and weight of EDI-generated evidence. Support was expressed for validating such agreements by a provision in the uniform rules.

104. While the Working Group agreed that party autonomy in the area of evidence should be recognized, it was noted that party autonomy in that area was subject to limits. Those limits concerned, for example, the need to respect the principle of equality of parties, the right of courts to have a degree of initiative in establishing the facts relevant to the dispute and the principle that an agreement between the parties should not adversely affect third persons.

105. One view was that such limits, the extent of which might vary among legal systems, were inherent to the concept of party autonomy and that there was no need for the uniform rules to express or unify them.

106. Another view was that, since the law of evidence reflected fundamental concepts of justice and public policy, it was necessary to state expressly in the uniform rules that party autonomy was subject to the rules of public policy.

107. Yet another view was that a degree of certainty as to the limits to party autonomy was desirable in the uniform rules, and that a mere reference to public policy did not provide sufficient certainty. It was also stated that it was important to distinguish admissibility of evidence as against third parties.

108. A further view, the motivation of which was to enable the courts and arbitral tribunals to validate the use of EDI systems created by private agreements, was that the uniform rules should provide that party autonomy in the area of evidence was recognized to the maximum extent possible under the applicable law. The need to promote international trade and the desirability to foster uniform interpretation of the uniform rules were mentioned in support of the latter view.

V. OBLIGATIONS OF PARTIES

A. Obligations of the sender of a message

109. The Working Group discussed the need to include in the uniform rules a provision determining the conditions under which the sender of an EDI message was bound by the content of the message.

110. In discussing that question, reference was made to article 5, paragraphs (1) to (4), of the UNCITRAL Model Law on International Credit Transfers, which specified the cases in which a sender was bound by a payment order issued by or on behalf of the sender. The text of article 5(1) to (4) reads as follows:

"Article 5
Obligations of sender

"(1) A sender is bound by a payment order or an amendment or revocation of a payment order if it was issued by the sender or by another person who had the authority to bind the sender.

"(2) When a payment order or an amendment or revocation of a payment order is subject to authentication other than by means of a mere comparison of signature, a purported sender who is not bound under paragraph (1) is nevertheless bound if

(a) the authentication is in the circumstances a commercially reasonable method of security against unauthorized payment orders; and

(b) the receiving bank complied with the authentication.

"(3) The parties are not permitted to agree that a purported sender is bound under paragraph (2) if the authentication is not commercially reasonable in the circumstances.

"(4) A purported sender is, however, not bound under paragraph (2) if it proves that the payment order as received by the receiving bank resulted from the actions of a person other than

(a) a present or former employee of the purported sender, or

(b) a person whose relationship with the purported sender enabled that person to gain access to the authentication procedure.

The preceding sentence does not apply if the receiving bank proves that the payment order resulted from the actions of a person who had gained access to the authentication procedure through the fault of the purported sender."

111. One view was that there existed good reasons for resolving in the uniform rules the question of when the sender or a purported sender would be bound by the content of a message. A suggestion was made to include in the uniform rules a provision, inspired by article 5(1) of the Model Law, to the effect that, if the rules on the authentication of messages had been complied with, a sender would be bound by the content of a message if the message was sent by the sender or by another person who had the authority to bind the sender. Additional provisions, the content of which remained to be considered, should address the question when should the recipient of a message who had no reason to doubt the authenticity of the message be able to regard the message as binding on the purported sender.

112. It was stated that, while many EDI messages were not intended to obligate the sender contractually, numerous other EDI messages were intended to establish a binding obligation on the sender, and that, as to the latter type of message, it was necessary to give to the receiver a degree of certainty that the received message could be relied and acted upon. It was further suggested that the discussed provision, which was intimately linked with authentication and security procedures, would stimulate participants in EDI to observe and improve those procedures. It was added that, in providing that certainty, appropriate attention had to be paid to duties of the receiver of the message and of any third party that provided services in the transmission of the message.

113. Another view was that the question whether a sender or a purported sender was bound by a message fell outside the focus of the uniform rules since it was a question pertaining to the underlying transaction rather than the question of the communication procedures. It was said that the existence of a provision on that question in the Model Law on Credit Transfers was not dispositive as regards the inclusion of a similar provision in the uniform rules, because those two legal texts covered different subject-matters. The Model Law dealt with contracts for the transfer of credits irrespective of the method used in transmitting payment orders, whereas the uniform rules focused on EDI as a particular method of communication irrespective of whether the EDI messages were intended to create contractual obligations.

114. It was observed that, while binding EDI messages might sometimes be sent between parties in the absence of an agreement on the interchange of messages, EDI messages intended to be binding were usually transmitted between parties that had entered into a previous agreement for the conclusion of contracts by EDI. It was suggested that there was little need for the discussed provision to cover messages sent in the framework of a previous agreement, since the answer to the question of the allocation of risk for unauthorized messages could be arrived at on the basis of the agreement and on the basis of the law applicable to that agreement. In opposition to that suggestion, it was said that the answer might not follow clearly from the agreement and that the applicable law on the issue might not be clear or internationally unified; thus, there was a need to solve the question by a harmonized provision in the uniform rules. As to messages sent between parties without a previous agreement between the parties, it was suggested that the appropriate solution was the general principle that a person could be bound by a message only if the message was sent or authorized by that person.

115. It was suggested that, in view of the different possible purposes that an EDI message might have, the uniform rules should perhaps not speak of a message being binding, but should rather merely refer to the purported sender as being deemed to be the sender of the message if specified conditions were met. It was suggested that the problem was essentially one of security and use of techniques such as functional acknowledgement. Another suggestion was that, in view of the fact that not all messages were intended to create an obligation, the provision might be restricted to messages whose purpose was to obligate the sender. A further suggestion was that, when the receiver of a message complied with authentication and security procedures and had no reason to doubt the authenticity of the message, the uniform rules should establish a presumption that the message stemmed from the purported sender, but that the purported sender should have a possibility to rebut that presumption.

B. Obligations subsequent to transmission

1. Functional acknowledgement

116. It was generally agreed that a possible rule should make it clear that a functional acknowledgement, the purpose of which was merely to indicate that a message had been received, was not intended to carry any legal effect as to the possible formation of contracts by means of EDI communications. In no instance, unless expressly agreed otherwise by the parties, should an acknowledgement of receipt be confused with any decision on the part of the receiving party to agree with the content of the message.

117. Various views were expressed as to whether the uniform rules should establish a statutory duty to issue functional acknowledgements in the absence of an agreement by the parties. Support was expressed in favour of the view that, as a matter of principle, the uniform rules should not impose acknowledgement requirements any more than they should impose the use of any more sophisticated security procedure. It was noted that the use of functional acknowledgements was essentially a business decision to be made by the parties to an EDI transaction. In that connection, it was suggested that functional acknowledgements were comparable to registered mail. It was noted that, with respect to certain classes of messages, the use of even the simple and relatively inexpensive procedure of a functional acknowledgement might be regarded as excessively burdensome and costly.

118. Another view was that the uniform rules should establish a duty to issue functional acknowledgements with respect to all received messages, subject to express agreement of the parties to the contrary. It was stated that an important feature of the uniform rules would be to induce parties to take advantage of the unique capability of EDI to provide immediate certainty as to the receipt of a message. It was also stated that mechanisms providing for automatic acknowledgements of receipt of messages were generally built into EDI systems, thus providing for acknowledgement of receipt at high speed and low cost.

119. The Working Group discussed the possible content of a legal regime of functional acknowledgements. The view was expressed that, irrespective of whether the uniform rules established statutory duties, default rules were needed to deal with the situation where functional acknowledgements were requested in individual messages exchanged between parties that were not linked by a communication agreement, or in situations where verifications were sent, even if not requested. The Working Group considered the following proposal as a basis for discussion:

"Unless otherwise agreed by the parties,

(1) Any party may request the acknowledgement of receipt of the message from the receiver;

(2) Acknowledgement of receipt should be given without undue delay, and at the latest within one business day following the day of receipt of the message to be acknowledged;

(3) The receiver of such a request is not entitled to act upon the received message until an acknowledgement has been given;

(4) When the sender does not receive the acknowledgement of receipt within the time limit, he is entitled to consider the message null and void on so advising the receiver."

120. As regards the consequences of a failure to issue a requested acknowledgement, support was expressed in favour of the above-mentioned proposal. It was stated that the proposal appropriately preserved the possibility that receipt of a message could be evidenced by means other than a functional acknowledgement. It was also stated that the proposal also established a balance between the rights and obligations of the sender and of the recipient. However, a concern was expressed that a provision along the lines of the proposed text might lead to undesirable results, for example if it were misinterpreted as implying that a message containing the acceptance of an offer could be revoked after it had been received, or as implying that a message could not be revoked regardless of the fact that an acknowledgement had been received. Another concern was that such a provision might provide the basis for a claim regarding consequential damages that might result from a failure to issue a functional acknowledgement.

121. A suggestion was made that, instead of focusing on the failure to issue a requested acknowledgement, the uniform rules should state the consequences of proper acknowledgement, for example by establishing that the issuance of a functional acknowledgement would constitute conclusive or presumptive evidence that the message had been received. However, it was observed that such a rule might affect rules regarding the burden of proof. Another suggestion was to provide that the receiver was not obliged to acknowledge a message, but was not, however, entitled to act on the message if an acknowledgement was

requested. A further suggestion was to provide that failure to send an acknowledgement might be taken into account in determining whether a recipient was entitled to rely on a message; but such a provision would not prevent the sender from stipulating, or the parties from agreeing, that a message would have no effect until an acknowledgement had been received.

122. As regards the time within which acknowledgement of receipt should be given, it was generally agreed that, in consideration of the various expectations of the parties, various business practices and various possible technical solutions, it would be inappropriate to establish a specific time-limit for the sending of the acknowledgement. A mere indication that the acknowledgement should be given without undue delay was considered appropriate.

2. Record of transactions

123. It was proposed to include in the uniform rules a provision that would recognize the acceptability of storage of EDI records in forms other than paper. It was suggested that the uniform rules might provide that storage of data by means other than paper or microfiche should be considered equivalent to storage in the form of paper or microfiche, provided that, as appropriate, the functions of unalterability, durability and permanent readability were fulfilled.

124. Some opposition was expressed against such a provision on the ground that it would unduly interfere with national rules on keeping of records. The prevailing view, however, was that it would be desirable to have a such rule, which should be restricted to validating storage of records in electronic or similar form, since the rule would increase opportunities for reducing the cost of storage of records. In the context of the prevailing view, it was suggested that it was necessary to consider, from the viewpoint of supervisory authorities, the question of the cost of equipment needed to make the data stored readable in a human language.

125. Another proposal was to provide in the uniform rules that the obligation to maintain archives, for contract or other legal purposes, had to be standardized on the basis of an irreducible period of time of six years. At the end of that period, evidence of the archived messages could be provided by any means. No support was expressed for such a rule, which would deal with the questions of which records had to be stored and for how long they had to be stored. Those questions concerned activities of national supervisory bodies, which were not considered a proper subject-matter for the uniform rules.

VI. FORMATION OF CONTRACTS

A. Consent, offer and acceptance

126. It was observed that parties that exchanged trade messages by EDI usually entered into a "master agreement" in which they dealt with various issues relating to the conclusion of contracts, including the form of contract and the elements required for the expression of consent by the parties. Those issues could be dealt with in master agreements with a view to eliminating any uncertainty the parties might perceive as arising from the application of general rules of contract law in the EDI context.

127. It was suggested that one purpose of the uniform rules would be to validate the practice of concluding such master agreements, to the extent they were compatible with principles of public policy in the relevant State.

128. As to clauses in master agreements on the form of contract, the Working Group recalled its discussion on contractual definitions of writing (see para. 62 above). The Working Group recognized that, while it was desirable in principle to validate such clauses, States might not wish to allow full party autonomy as to the form of certain kinds of contracts and that, therefore, the provision in the uniform rules validating those clauses should be made subject to mandatory rules or public policy in the relevant State. It was observed, however, that merely making party autonomy in this respect subject to mandatory law or public policy would not provide sufficient certainty as to the validity of those clauses and that the limits of party autonomy in that area should be formulated more precisely.

129. As to clauses in master agreements governing the consent necessary for the formation of contracts, the Working Group considered cases in which the process of sending contract offers and accepting those offers was automated by appropriate programming of computers of the parties. The Working Group also recalled its discussion of such "automated" contracting at its previous session (A/CN.9/360, paras. 83-85).

130. Views were expressed that under existing rules of contract law parties were free to use such automated messages for the purpose of concluding contracts, and that within those existing rules parties were also free to deal in a master agreement with questions such as when a contract would be deemed concluded. It was suggested that there was no need for a provision on such automated formation of contracts.

131. Another view was that, to the extent any doubts existed as to the legal effects of automated formation of contracts, it would be useful to eliminate those doubts by an express provision in the uniform rules. This view was shared also by some of those who considered that, since computers programmed to automatically trigger contract offers and acceptances were carrying out conscious decisions of humans, such use of computers should normally be acceptable.

132. For a situation in which a computer, for example as a result of an unintended mistake in the computer program, generated a message that was in fact not intended, the consequences of the message should be borne by the party or parties responsible for the programming of the computer.

133. However, a view was also expressed that it was risky to allow full freedom to program computers to trigger contract offers and acceptances automatically and that, in the understanding of some national laws, ultimate human approval was necessary for a contract to be concluded.

B. Time of formation of contract

134. Support was expressed for the inclusion in the uniform rules of a provision relating to the time of formation of contracts by EDI messages.

135. One view was that such a provision should be restricted to defining the time when EDI messages should become effective or the time when the message should be deemed received. That approach, where the message in question was an acceptance of a contract offer, would provide a basis for determining the

time of conclusion of the contract by reference to general rules on contract formation. The advantage of that approach was said to be that it did not interfere with, or duplicate, general rules of contract law. Another advantage was that the provision would provide welcome clarity for all EDI messages and not only for messages that constituted acceptance of a contract offer.

136. Another view was that the uniform rules should provide a direct answer to the question of when a contract made by EDI should be deemed concluded. Such an approach was said to be needed in order to provide certainty on one of the most crucial questions of EDI.

137. As to the time when a message becomes effective (or is deemed received), or as to the time when a contract made by EDI is deemed to be concluded, several possible points of time were mentioned: when the message (or acceptance of a contract offer) enters the computer system of the receiver; when the message (or acceptance) is made available to the information system; when the message (or acceptance) reaches the information system; when the message (or acceptance) enters, and is recorded by, the computer system of the receiver; when the message (or acceptance) is made available to the receiver's information system interpreting and processing the message; when the message (or acceptance) is recorded on the computer system directly controlled by the receiver in such a way that it could be retrieved; or when the message (or acceptance) reaches the receiver.

138. The concept of "availability" of the message containing the acceptance of a contract offer was criticized as unclear. Another criticism was that the concept appeared to be different from the rule applicable in general contract law, most notably the rule in article 18(2) of the United Nations Sales Convention, according to which an acceptance of an offer became effective at the moment the indication of assent reached the offeror. It was pointed out that some of the EDI situations dealt with by the uniform rules would also be covered by the United Nations Sales Convention and different rules on formation of contracts could create uncertainty.

139. As to the expressions "enters" or "reaches the computer or information system" or expressions of similar meaning, it was observed that, when the receiver did not receive the messages individually but in batches ("batch processing"), there existed a hiatus between the time of entry of data in the information system of the receiver and the time when the receiver could in fact act upon the information.

Non-mandatory nature of the provision

140. The Working Group agreed that provisions on the effectiveness of an EDI message and on the time of acceptance of a contract offer should not be made mandatory.

141. Different views were expressed as to how the non-mandatory nature of the provision should be expressed. One view was that the uniform rules should expressly provide that the provision was subject to rules of industry practice or trade usages. That approach might also be implemented by including in the uniform rules a definition of "agreement by the parties", with appropriate reference to the possibility that such an agreement might be implied from a course of dealing, practice or usage of trade.

142. That view was opposed on the ground that it was not for the uniform rules to resolve the question of the applicability of trade usages or of rules of

industry practice. The preferable approach was said to be to make it clear that the provision in question was subject to party autonomy by using an expression along the lines of "unless otherwise agreed by the parties" or by a reference to "trade usages accepted by the parties", which would make the applicability of trade usages or practices a matter of interpretation.

143. It was observed that the question of the applicability of usages was dealt with in article 9 of the United Nations Sales Convention. It was also observed that it was widely accepted in legal systems that a party should be permitted to give evidence that a particular usage or practice existed in order to displace any contrary non-mandatory rule.

C. Place of formation of contract

144. One view was that there was no need for the uniform rules to deal with the question of the place at which a contract was deemed to be concluded. It was said that the question was one pertaining to the law governing the underlying transaction and that the uniform rules should not interfere with that law. It was also said that, to the extent the uniform rules were to contain the receipt-rule for determining the time of the formation of the contract (see A/CN.9/WG.IV/XXV/CRP.1/Add.10, paras. 1-10), the receipt-rule would provide a sufficient basis for interpreting where the contract was deemed to be concluded.

145. Another opinion was that, in view of possible implications that might follow from the place of contract formation (e.g., court or regulatory jurisdiction, duty to pay taxes, or the applicable law), it was desirable for the uniform rules to provide clarity on the question. It was suggested that in preparing the provision a review should be made of trade practices and of solutions adopted in agreements for the interchange of EDI information.

146. It was agreed that any provision on the place of contract conclusion should be subject to party autonomy. As to the content of the provision, one suggestion was that the relevant place was the place where the offeror's computer system received the acceptance of the contract offer. Reservations were expressed with respect to that suggestion on the ground that parties might have their computer systems installed in States that were not their places of business, and that contracts might have no relation to the State where computer systems were located. Another suggestion was that the contract was deemed to be concluded at the place where the party receiving the acceptance of the contract offer had its place of business. That suggestion was questioned as being uncertain, since a party might have several places of business, and it might not be clear which was the relevant place of business.

D. General conditions

147. The Working Group decided to reconsider the issue at a later stage of its deliberations (see A/CN.9/WG.IV/WP.55. paras. 109-113).

VII. LIABILITY AND RISK OF A PARTY

148. The view was expressed that, when dealing with the issues of liability and risk, special weight should be given to the principle of party autonomy. In particular, the uniform rules should ensure that, as between themselves,

parties relying on the use of EDI were free to allocate the risks and to agree on a limitation of their liability with respect to either direct or indirect damages that might result from the use of EDI.

149. Another view was that mandatory rules on the allocation of risks and liabilities should be included in the uniform rules to limit the validity of possibly abusive exculpatory clauses that might be imposed, in the context of a trading-partner agreement, by parties with stronger technical know-how and bargaining power upon weaker EDI users. Views were expressed that the issue of exculpatory clauses might be more relevant in the context of agreements concluded with third-party service providers than in the context of trading-partner agreements.

150. As to the possible content of rules on liability in the uniform rules, a concern was expressed that, in dealing with liability in connection with communication issues (e.g., liability for failure or error in the transmission of a message), the uniform rules should not affect the legal regime applicable to the commercial transaction for the implementation of which EDI would be used.

151. It was suggested that, in determining possible rules on the allocation of liability and risk, a distinction should be drawn between the situations where no party was at fault and the situations where a party was in breach of its obligations.

152. It was widely felt that, prior to discussing the possible content of rules on liability and risk, the Working Group should identify the various risks that might be faced by parties to an EDI transaction and consider factors that might be taken into account in allocating liability and risk. It was suggested that the risks to be considered included the following: failure in communication; alteration of the content of a message; delayed communication; communication of data to the wrong addressee; divulging of confidential data; repudiation of the original message; temporary or permanent unavailability of EDI services.

VIII. FURTHER ISSUES POSSIBLY TO BE DEALT WITH

153. For lack of time, the Working Group did not discuss the liability of third-party service providers (see A/CN.9/WP.IV/WP.55, paras. 124-134) and documents of title and securities (see A/CN.9/WP.IV/WP.55, paras. 135-136). It was agreed that these issues would be considered at a later session.